The Relationship of Task and Ego Orientation To Performance-Cognitive Content, Affect, and Attributions in Bowling

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The purpose of the present study was to examine the relationship of individual differences in goal orientation to mid-activity cognitive content and affect and post-performance attributions across three games of bowling. Forty-seven undergraduate students enrolled in bowling activity classes were recruited as subjects and asked to play a standard 10-frame bowling game in a learning-focused environment on three different days. The subjects' dispositional proneness toward task and ego involvement was measured by the Task and Ego Orientation in Sport Questionnaire. Cognitive content, affect, and performance attributions were assessed by a self-report questionnaire. The results suggested that the students' cognitive and affective patterns during and following performance tended to vary as a function of the goal perspective. Task orientation negatively correlated with performance worry (Game 2) and positively related to enjoyment (Game 3). Ego orientation correlated negatively with strategy formulation (Game 3). For Game 1, task orientation positively correlated with the perception that effort most impacted performance, while ego orientation correlated positively with the belief that ability most influenced performance. Future research directions and the practical significance of the results are discussed.

Le but de cette étude était étudier le rapport entre les différences particuliers de l'orientation de but au mi-activité contenu cognitif et l'effêt et les attributions de post-performance à travers trois jeux de bowling. Quarante-sèpt étudiants immatriculés dans des classes de l'activité du bowling, ils se sont apportés pour être sujets et ils se sont demandés jouer 10-disposition des quilles dans un milieu concentré sur l'apprendre en trois jours diverses. La prédisposition des sujets à la tâche et la participation de soi-même, elles se sont mesurés par le "Task and Ego Orientation in Sport Questionnaire." Le contenu cognitif, l'atteinte et les attributions de performance ils se sont evalués par une questionnaire d'un exposé de soi-même. Les résultats ont suggéré que les models cognitifs et affectifs des étudiants pendant et aprés de la performance tendent à varier comme fonction du perspectif de but. L'orientation de tâche était en correlation negative avec l'inquiète de la performance (Game 2) et elle était en correlation positive avec le plaisir (Game 3). L'orientation de soi-même est correlé negativement avec la formulation de strategie (Game 3). Pour le "Game 1," l'orientation de tâche a correlé positivement avec la perception que l'effort a plus dominé la performance, tandis que l'orientation de soi-même correlait

positivement avec la croyance que cette capabilité a plus inluencé la performance. La direction de recherche de l'avenir et la significance pratique des résultats sont deliberé.

Contemporary social cognitive theories of achievement motivation have focused on goal perspectives and their influence on achievement-related cognitions, affect, and behavior (Ames, 1984; Dweck & Elliott, 1983; Nicholls, 1984a, 1984b, 1989). The underlying premise of these theories is that there are two primary goal perspectives which reflect the criteria by which individuals judge their competence and subjectively define success and failure in achievement settings, namely a task orientation and an ego orientation. When task oriented, perceptions of ability are self-referenced. Skill mastery, working hard, and active engagement in sport are reflective of high competence and ultimately subjective success (Nicholls, 1984a). In contrast, when ego oriented, perceptions of ability are normatively referenced. A primary source of competence and subjective success for an ego-involved individual is beating or doing better than others while engaged in a competitive sporting encounter (Nicholls, 1984a).

A majority of the research in this area has focused on the behavioral consequences of differences in goal perspective. Theoretically, it has been proposed that an emphasis on mastery or task involving goals is related to enhanced sport performance and persistence. A focus on ego involving goals, on the other hand, is linked to a lack of persistence and debilitated performance (Dweck & Elliott, 1983; Elliott & Dweck, 1988; Nicholls, 1984a). These relationships are thought to exist due primarily to the differential criteria employed to elicit feelings of success. For the task oriented individual, skill improvement, sport mastery, and exerted effort are fundamental to perceptions of goal accomplishment. This internal referencing of success is presumed to be more conducive to the maintenance of perceived competence, long term activity engagement, and performance enhancement. Conversely, for the ego oriented person, perceptions of accomplishment are the consequence of beating or surpassing others in a competitive contest. Since other referenced comparative judgements underlie success, perceived ability is much more "fragile" when ego involved. It is assumed that an ego orientation, particularly when coupled with perceptions of low ability, is more likely to elicit dropping out of sport and less than optimal performance (Duda, 1989; Nicholls, 1984a; Nicholls, 1984b).

These hypotheses have been supported in both classroom-related and sport-based research. In the classroom, the adoption of ego-involving goals has been

associated with a withdrawal of effort, a disbelief in the utility of trying hard (Ames, 1984; Diener & Dweck, 1978), and impaired performance (Diener & Dweck, 1978; Elliott & Dweck, 1988). In sport-based research it has been found that a task orientation positively relates to continued sport involvement (Duda, 1988), a willingness to exert effort (Duda & Chi, 1989; Hall, 1989), and improved performance (Hall, 1989).

Critical to the determination of the effect of goal perspectives on achievement behaviors, such as performance and persistence, is an understanding of the variables which may mediate this relationship. Such insight will shed light on the possible mechanisms underlying the relationship between goals and behavioral patterns (Elliott & Dweck, 1988). In previous work, variables which have been proposed to mediate the goal perspective-behavior link are performance-related cognitive content and affect, and post-performance attributions (Dweck & Elliott, 1983; Nicholls, 1989; Duda, 1992).

Previous studies have focused on the cognitive content, i.e., self-statements and strategy formulation, of task- and ego-involved individuals while engaged in cognitive tasks. For example, Diener and Dweck (1978) assessed unrestrained mid-activity verbalizations of task oriented and learned helpless (which is a consequence of a pronounced ego orientation) individuals. They found that the cognitions of the task-involved subjects were characterized by positive monitoring and self instructions. In contrast, the ego involved subjects focused on solution irrelevant and negative affect statements. Additional research suggests that, irrespective of skill level, individuals who focus on task-involved goals exhibit fewer statements of negative affect (Elliott & Dweck, 1988) and are more apt to employ learning based strategies while performing (Ames & Archer, 1988).

Preliminary research in sport has supported the findings found in the classroom. Task orientation has been found to negatively correlate with the tendency to have task relevant worries (Newton & Duda, 1992; White & Duda, 1991), and be positively associated with the perception that playing sport is fun (Duda, Chi & Newton, 1989; Duda & Nicholls, 1989). Additionally, Vallerand, Gauvin, and Halliwell (1986) found that when children who were requested to perform a physical skill were assigned to a task-involving condition, they were more likely to try new strategies than youngsters in an ego-involving condition.

Performance attributions, or the explanations individuals give for their performance after a task is completed, have also been posited to mediate the relationship between achievement goals and behavior (Dweck & Elliott, 1983; Nicholls, 1989; Duda, 1992). Research in the classroom suggests that task oriented individuals tend

to attribute their performance to effort (trying hard or not trying hard enough), while ego oriented individuals tend to attribute their performance to innate ability or lack thereof (Ames, 1984; Ames & Ames, 1981; Diener & Dweck, 1978). These findings have been corroborated in sport research. Task orientation has been found to be positively related to the belief that success in sport is a function of hard work and practice (Duda, Newton & Chi, 1989; Duda & Nicholls, in press). In a field experiment, Duda and Chi (1989) reported that subjects who lost in an ego-involving game were less likely to attribute the loss to effort than losers in a task-involving condition.

In general, the above literature suggests that a more adaptive learning style in the classroom and sport is associated with a task orientation. To date, the relationship of personal goal orientations to performance-related cognitions and affective responses have not been examined in the context of sport activity skill classes. Further, these relationships have not been investigated over an extended period of time.

The purpose of this study was to examine the relationship of individual differences in goal orientation to mid-activity cognitive content and affect, and post-performance attributions across three games of bowling. It was hypothesized that task orientation would positively relate to reported mid-activity task enjoyment, strategy formulation, concentration, and an emphasis on effort and be negatively associated with performance worry and negative cognitions. Furthermore, task orientation was hypothesized to correspond positively with an attributional focus on effort. Conversely, ego orientation was expected to negatively relate to mid-activity task enjoyment, strategy formulation, concentration and an emphasis on effort and positively correspond to performance worry and negative cognitions. Additionally, ego orientation was hypothesized to be positively associated with an attributional focus on ability.

Method

Subjects

Forty-seven undergraduate students (N = 25 males and N = 22 females) enrolled in two bowling activity courses were recruited as subjects. The average age of the subjects was 20.90 +/- 1.90 years. The bowling classes in which the subjects were enrolled comprised two sections of a sixteen week, 1 unit bowling skill activity course. The subjects represented a wide variety of academic majors and bowling expertise.

Assessments and Procedure

One week prior to the bowling games of interest, the subjects' dispositional

proneness toward task and ego involvement was assessed using the 13-item Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda, 1989; Duda Nicholls, 1991). When completing the TEOSQ, subjects were requested to think of when they felt most successful in sport and then indicate their agreement (on 5 point Likert-type scales; 1 = strongly disagree, 5 = strongly agree) with items reflecting task-involved (e.g., "I learn a new skill by trying hard") and ego-involved (e.g., "The others can't do as well as me") criteria. The TEOSQ has repeatedly been shown to have a stable two factor structure with six items loading on Task Orientation and seven items loading on Ego Orientation (Boyd, 1990; Chi & Duda, 1992; Duda & Nicholls, 1989b; White & Duda,in press). Additionally, the Task and Ego Orientation in Sport Questionnaire scales (Duda, 1992) have been found to internally consistent (alpha = .81-.86 and .79-.90, respectively) and have acceptable test-retest reliability (r = .68 and .75, respectively). In the present study, the TEOSQ subscales exhibited adequate internal consistency (the Cronbach alpha coefficients for the Task and Ego Orientation subscales were .75 and .68, respectively).

On three different days within one calender week, the subjects were asked to play a standard 10 frame bowling game within a learning focused environment. The subjects were told that the goal of each game was to work hard, try to improve their bowling skills and technique, and to have fun. The objective outcome of the game (i.e., win or loss) was devalued.

Immediately following each game, the subjects were asked to recall the midpoint of their game and respond to 6 items targeting the qualitative nature of their cognitive content and affect at that time. Specifically, the subjects were asked to respond to items (on a 5 point Likert-type scale; 1 = strongly disagree, 5 = strongly agree) assessing their degree of concentration ("I concentrated well"), performance worry ("I was worried about my performance~), enjoyment ("I was having a good time"), perceived effort ("I was trying hard"), strategy formulation ("I tried new strategies to succeed"), and negative cognitions ("I was saying negative things to myself"). Additionally, the subjects were asked to rate the degree to which effort, ability, luck, and their opponent's ability impacted their overall game performance. All responses were indicated on a 5-point Likert-type scale (1 = no impact; 5 = great impact).

Results

For each of the three games, simple correlational analyses were performed to determine the relationship between goal orientation and mid-activity cognitive/ affective content and performance attributions. Furthermore, in order to determine

Table 1

Correlations Between Task and Ego Orientation and Mid-Adtivity Cognitions/Affect For Games 1-3

	Task Orientation			Ego Orientation		
	Game 1	Game 2	Game 3	Game 1	Game 2	Game 3
Performance Worry	-.23	-.46**	-.05	.24	.08	.11
Enjoyment	.24	.19	.46**	-.12	.08	-.25
Effort	.20	.17	.26	.17	.06	.03
Concentration	.20	.09	.16	.07	.04	-.19
Strategy Formulation	.07	.18	-.01	.06	-.12	-.37*
Negative Thoughts	-.15	.04	-.11	.03	.05	.09

Note: *p <.05, **p<.O 1

the multivariate relationship of goal orientation to cognitive content and attributions for Games 1-3, canonical correlational analyses were conducted.

Table 2

Game 3 Canonical Loadings: Goal Perspectives and Mid-Adtivity Cognitions

Goal Perspective	*Function One*
Task Orientation	.693
Ego Orientation	-.672
Mid-Adtivity Cognitions	
Performance Worry	-.007
Enjoyment	.922
Effort	.103
Concentration	-.222
Strategy Formulation	.564
Negative Thoughts	-.260

Mid-Activity Cognitive and Affect Content

The correlation between goal orientations and indices of mid-activity cognitive content during each of the three games can be seen in Table 1. Although significant for Game 2 only, task orientation negatively correlated with performance worry. During Game 3 task orientation was positively related to reported enjoyment of the sport. Ego orientation did not correlate significantly with either performance worry or sport enjoyment. By Game 3, a significant negative relationship emerged between ego orientation and strategy formulation.

Canonical correlation analyses were conducted to determine the multivariate relationship of task and ego orientation to mid-activity cognitive content in Games 1-3. In the case of the first two games, no significant canonical functions emerged (Wilks' lambda = .78, $p > .05$, canonical correlation squared = .15, Wilks' lambda = .67, $p > .05$, canonical correlation squared = .30, respectively)

With respect to Game 3, one significant function was revealed (Wilks' lambda = .49, $p < .05$; canonical correlation squared = .34). As shown in Table 2, an examination of the standardized canonical coefficients indicated that a moderately strong task orientation and a moderate de-emphasis on ego orientation related to greater enjoyment and employment of new strategies during Game 3.

Performance Attributions

Table 3 shows the simple correlations between goal orientations and performance attributions for Games 1-3. On Game1, task orientation was significantly and positively associated with the perception that effort most impacted performance. Ego

Table 3

Correlations Between Task and Ego Orientation and Performance Attributions or Games 1-3.

	Task Orientation			Ego Orientation		
	Game 1	Game 2	Game 3	Game 1	Game 2	Game 3
Effort	.36*	.22	-.04	-.19	.16	.14
Ability	.04	-.16	-.18	.45**	.21	.16
Luck	.00	.12	.04	.00	.15	-.09
Opponent's Skill	-.27	-.12	-.06	.17	.08	.27

Note: *p<.05, **p<.O 1

orientation was positively correlated with the belief that the day's bowling performance was influenced by one's own ability on Game 1.

The multivariate relationship between dispositional goal perspectives and attribution ratings for Game 1-3 were examined via canonical correlation analysis. In terms of Game 1, one significant canonical function emerged (Wilks' lambda = .53, $p < .003$, canonical correlation squared = .38). As shown in Table 4, a moderate, negative loading on task orientation and a relatively high, positive loading on ego orientation related negatively to the perception that effort impacted performance and was positively associated with the belief that one's own ability and luck influenced performance. No significant canonical functions emerged when the multivariate relationship between goal orientations and attributions in Games 2 and 3 were examined (Wilks' lambda = .75 and .78, $p > .05$, squared canonical correlation = .19 and .20, respectively).

Table 4

Game 1 Canonical Loadings: Goal Perspectives and Performance Attributions

Goal Perspective	*Function One*
Task Orientation	- .582
Ego Orientation	.792
Mid-Adtivity Cognitions	
Effort	-.762
Ability	.599
Luck	.491
Opponent's Luck	.149

Discussion

Contemporary examination of achievement motivation from a social cognitive perspective has been concerned with the effect of goals on cognitive and affective patterns and subsequent behavior. The present study was designed to examine the interrelationships of goal orientation to students' cognitive and affective responses over time in a learning-based sport activity setting. The findings suggest that within

an environment focused on the learning of sport skills, students' cognitive and affective responses during and following performance vary as a function of the goal perspective of the student. In general, an emphasis on task orientation corresponded to greater enjoyment (during Game 3), less performance worry (during Game 2) and an attributional focus on effort (following Game 1). Conversely, an emphasis on ego orientation was related to decreased strategy formulation (during Game 3) and an attributional focus on ability (following Game 1).

These findings are compatible with predictions emanating from recent social cognitive theories of achievement motivation (Ames, 1984; Dweck & Elliott, 1983; Nicholls, 1984a; 1989). A disposition toward task involvement entails an internal referencing of perceived ability and a focus on improving and skill attainment. Consequently, it is logical that such individuals would place importance on effort during performance and be less likely to exhibit cognitive anxiety during task execution since the performance outcome is not utmost in their mind. The present findings partially support such claims. In Game 2, task orientation was significantly and negatively related to performance worry. The same trend (although not significant) was found in Game 1. The lack of a consistent pattern of results across Games 1 and 2 may have been due to the relatively small sample size. The lack of similar relationship emerging for Game 3 may be due in part to the sample size coupled with the fact that the lack of individualized bowling skill instruction (which was halted during the study) may have negatively affected the task oriented subjects, thus weakening any trend toward a negative relationship with performance worry.

In contrast to what was hypothesized, ego orientation did not significantly correspond with performance worry. Possibly this was due to the emphasis placed on learning and having fun in the situation at hand. The context in which the games took place was not highly competitive, and thus it is not unreasonable to find that most students would not be overly worried about their performance.

Consistent with theoretical predictions, past sport studies have found goal perspectives to differentially relate to the level of satisfaction and intrinsic motivation in the athletic domain (Duda, Chi, & Newton, 1989). Since task-oriented participants tend to participate in an activity as an "end in itself" rather than a "means to an end" (Nicholls, 1989), it follows that such individuals would be more inclined to experience enjoyment while participating. In the present study, task orientation corresponded to greater enjoyment of bowling across the three instances of bowling and this relationship was significant in Game 3.

Conversely, individuals with a disposition toward ego involvement tend to perceive participation in activities as an 'means to an end', and tend to place more

emphasis on the product rather than the process of learning. It follows that these individuals would be less likely to experience intrinsic enjoyment while participating because their focus is on a competitive outcome and how they compare with referent others. It also seems logical that since egooriented individuals are concerned with how they compare with others, they would be less likely to risk trying new strategies to secure success.

These assumptions were partially supported in the present study. A significant negative association emerged between ego orientation and strategy formulation in Game 3. Albeit not significant, a negative relationship was also revealed between ego orientation and sport enjoyment during Games 1 and 3. Canonical correlational analyses revealed that for Game 3 a moderate emphasis on task orientation coupled with a moderate de-emphasis on ego orientation was linked to increased enjoyment of the sport and increased use of strategies while bowling.

The lack of significant findings to support or refute the hypotheses concerning effort, concentration, and negative cognitions highlight some limitations of the present study. The small subject sample restricted the power of the analyses. Additionally, the sport of bowling in our culture is generally viewed as a leisure activity. As such, exerted effort, concentration, strategy formulation, and negative cognitions are not perceived to be intimately linked to the sport. The learning or a strongly task-oriented environment of the study possibly mitigated the pronounced effects of dispositional goal perspectives.

Recent social cognitive theories of achievement motivation additionally propose differential attributional patterns for task and ego oriented individuals (Ames, 1984; Dweck & Elliott, 1983; Nicholls, 1984a, 1989). Since the focus of task oriented individuals is on skill improvement, the performance attributions they provide should focus on the role on effort. In the present study, task orientation related to an emphasis on effort attributions in Games 1 and 2, and was significant in the former case. In contrast, ego oriented individuals were expected to be preoccupied with demonstrating ability by comparing their talents and skills with that of others. It follows that they would tend to endorse ability attributions for their performance. A positive relationship between ego orientation and an emphasis placed on ability was found in each of the three times of bowling, and this correlation was significant in Game 1. Multivariate analysis supported and strengthened the univariate findings. High ego orientation (coupled with a de-emphasis on task orientation) was related to the attribution that ability most impacted performance.

In conclusion, contemporary views concerning achievement motivation have established a link between goal orientations and behavioral patterns. Although weak

and not necessarily consistent across the three games, this study found conceptually consonant relationships between goal perspectives and possible mediators of that relationship, namely mid-activity cognitive and affective content and performance attributions in college bowling skill classes.

In an attempt to more clearly delineate and isolate the relationship between goals and behavior, two suggestions are made for future research. First, incorporated in current social cognitive theories of achievement behavior is the belief that individual goal orientation interacts with perceived competence (Nicholls, 1984a; Nicholls, 1984b), which in turn affects behavior and emotion. Future research should investigate not only achievement goals, but also the interaction between goals and perceived level of competence in predicting achievement related cognitions and affect.

Second, a natural extension of the present research would be to examine the relationships between goals and behavior in a competitive environment, e.g., during a highly competitive tournament or league championships. A competitive context may enhance the salience of demonstrating ability and thus more clearly highlight differentiated relationships between goal orientations and achievement-related cognitions and affect.

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